

Phrynosoma douglassi pygmæa, subsp. nov.

In 1878 Mr. H. W. Henshaw forwarded to the National Museum, from the vicinity of Des Chutes River, Oregon, a number of horned lizards, which, though adults, are smaller than any known species of *Phrynosoma*. In 1881 Capt. Chas. Bendire, U. S. A., forwarded from Fort Walla Walla, Wash, Ter., the same species. A number of specimens have been found in the National Museum collection of reptiles from Fort Steilacoom. While resembling *P. douglassi* in many particulars, still there are many dissimilar characters, and the name is proposed as given above. Head more elongated and less flat above than in *P. douglassi*, superciliary ridges more strongly marked. Occipital and temporal spines, considering size, more acute and longer.

Body almost circular when viewed from above, not so long as in *P. douglassi*; limbs small in proportion to size, hind limbs extended, almost reaching axilla. Inframaxillary series of scales eight in number, not nine as in *P. douglassi*, separated from lower labials by two rows of subcircular scales, in each of which a well-developed pore may be seen. Femoral pores very minute.

Color above dark gray, with a double series of six black blotches, posteriorly margined with light gray. Chin and upper portion of breast minutely punctulated with black. The largest specimen, number 10918, from Fort Walla Walla, is from tip of tail to end of nose $3\frac{1}{10}$ inches in length, $1\frac{1}{2}$ inches in width across belly.

Number.	Locality.	Collector.	Date of collection.	Number of specimens.
10918	Fort Walla Walla, Wash.....	Capt Chas. Bendire, U. S. A.	1878	5
11473	Des Chutes River, Oreg.....	H. W. Henshaw.....	1878	2
11945	Oregon.....	do.....	3
9199	Fort Steilacoom.....	do.....	3

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CONTRIBUTION TO THE MIOCENE FLORA OF ALASKA.

By L. LESQUEREUX.

The Miocene flora of Alaska is partly known by a memoir of Heer, published in the second volume of his Arctic Flora. The memoir was prepared from specimens collected by M. Furuhielm, of Helsingfors, Finland, partly in the island of Kuin, in the vicinity of Sitka, partly at Cook's Inlet, near the peninsula of Aliaska. The plants described by Heer, representing 56 species, are of marked interest by their intimate relation with those of Atane, in Greenland, on one side, and with those of Carbon, in Wyoming and of the Bad Lands in Nevada, on the other. They compose a small group which supplies an intermediate point of

comparison for considering the march of the vegetation during the Miocene period from the polar circle to the middle of the North American continent, or from the thirty-fifth or fortieth to the eightieth degree of latitude. The remarkable affinity of the Miocene types, in their distribution from Spitzbergen and Greenland to the middle of Europe, had already been manifested by the celebrated works of Heer. But the Alaska flora has for this continent the great advantage of exposing, in the Miocene period, the predominance of vegetable types which have continued to our time and are still present in the vegetation of this continent.

To what was known until now of the Alaska flora a valuable addition has been procured by the collections made for the Smithsonian Institution by Dr. W. H. Dall, of the Coast Survey. A large number of finely preserved specimens of fossil plants were procured from Alaska and its vicinity—Coal Harbor, Unga Island, Shumagins (south side of Aliaska); Chugachik Bay, Cook's Inlet; and Chignik Bay, Aliaska Peninsula. In this valuable collection, which was intrusted to me for examination, I have found a number of species, already described by Heer, from Alaska, a few others described already from the Miocene of Greenland or of Europe, but not yet known from Alaska, and some new species. These last are described below with the enumeration of those described already, but not yet known in the flora of Alaska.

DESCRIPTION AND ENUMERATION OF SPECIES.

CRYPTOGAMEÆ.

EQUISETACEÆ.

Equisetum globulosum, sp. nov.

Rhizoma slender, thinly lineate, flexuous or rigid, distantly articulate, bearing simple opposite globular tubercles, more or less wrinkled by compression.

The branches from 1 to 6^{mm} in diameter, irregularly striate, straight, or flexuous, distantly articulate, bear at the articulations, simple opposite, globular appendages somewhat like those of *Physagenia Parlatorii* Heer (Fl. tert. Helv. 1, p. 109, pl. XLII, figs. 2-17), but globular and generally simple, very rarely appendiculate in two. These remains are much decomposed by maceration, and fragmentary, none of them continuous, and all without trace of sheath.

FILICES.

Osmunda Torelli Heer, Mioc. Fl. of Sakhalin, p. 19, pl. 1, f. 4, 4b.

Pecopteris Torelli Heer, Fl. Arct., 1, p. 88, pl. 1, f. 15.

Hemitelites Torelli Heer, *ibid.*, II, p. 462, pl. xl, figs. 1-5 a; lv. f. 2.

This species is represented by a very large number of specimens, mostly separate leaflets embedded in bowlders of carbonate of iron.

Most of the leaflets are simple, not lobate, oblong or ovate-lanceolate, entire or merely crenulate on the borders by the impressions of the veins. These leaflets are rarely preserved entire; the borders are often lacerated; they vary from $3\frac{1}{2}$ to 6^{cm} long and 1 to $2\frac{1}{2}$ ^{cm} broad. They evidently represent leaflets of an *Osmunda*.

Hab.—Coal Harbor, Unga Island.

CONIFERÆ.

Thuites (Chamæcyparis) Alaskensis, sp. nov.

Branchlets alternate, flattened, oblique; leaves imbricate on four ranks, the facial squamiform compressed, broadly rhomboidal quadrate, slightly narrowed to the base, inflated on the borders and in the middle toward the apex; the lateral flattened by compression, exposing half their face, and thus triangular, exactly filling the space between the base and the top of the facial leaves, all thick.

I find no distinct relation for this plant except with *Thuites Meriani* Heer. Fl. Aret., III, p. 73, pl. XVI, figs. 17, 18, a cretaceous species differing by the facial leaves ovate, narrower towards the apex.

Hab.—Same as the preceding.

MYRICACEÆ.

Comptonia cuspidata, sp. nov.

Leaves long, linear or very gradually tapering upwards to a terminal narrowly elliptical lobe, pointed or apiculate by the excurrent medial nerve, pinnately lobed; lobes coriaceous, convex, subalternate, free at base, irregularly trapezoidal or obliquely oblong, inclined upwards and sharply acute or cuspidate; primary nerves two, or three in the largest lobes, oblique, the upper curving in ascending to the acumen and branching outside, the lower parallel and curving along the borders, anastomosing with branches of the superior ones, generally separated by simple secondary short nerves.

Comparable to *Comptonia acutiloba* Brgt. and other European Tertiary species of this group, but distinct from all by the large cuspidate lobes turned upwards, &c.

Hab.—Same as the preceding.

Comptonia præmissa, sp. nov.

Leaves long, linear in their whole length, 5 to 10^{cm} long, 12 to 15^{mm} broad; deeply equally pinnate-lobate; lobes very obtuse or half round cut to the middle and slightly decurring in their point of connection, the terminal very obtuse; nervation obsolete, substance somewhat thick but not coriaceous.

The species has its greatest affinity to the living *Comptonia asplenifolia* Ait. It also appears related to *C. rotundata* Wat., as described by Schimper, Pal. veget., II, p. 555, a species known to me only by its description.

Hab.—Chignik Bay, Alaska.

BETULACEÆ.

Betula Alaskana, sp. nov.

Leaves small, round in outline, rounded or truncate at base, deeply obtusely dentate all around, except at the base, turned back or recurved on a short petiole; medial nerve distinct, the lateral obsolete; catkins short, cylindrical, oblong or slightly inflated, in the middle erect.

Except that no glands are perceivable upon the stems, this species agrees in all its characters with *Betula glandulosa*, Michx. of Oregon. I consider it as identical.

Hab.—Chignik Bay, Aliaska.

Alnus corylifolia, sp. nov.

Leaves large, broadly ovate, rounded or cordate at base, acuminate or narrowly oblong-ovate, doubly dentate on the borders, primary teeth large, distant more or less sharply denticulate on the back, secondary nerves oblique, parallel, the lower pairs more open, all generally simple, except a few thin tertiary branches near the borders, passing to the points of the teeth; surface smooth; fibrilles rarely distinct; petiole comparatively long.

Resembles *Corylus M. Quarryi* Heer, differing by the smooth surface, the nervilles obsolete, the nerves not branching, the long petiole, &c.

Hab.—Chugachik Bay, Cook's Inlet, Alaska.

CUPULIFERÆ.

Carpinus grandis, Ung.

In numerous specimens.

Hab.—Same as the preceding. Described also from Greenland by Heer.

Fagus Deucalionis Ung.

The collection has a single specimen of this species. Heer has described it from Greenland.

Hab.—With the preceding.

Quercus Dallii, sp. nov.

Leaves subcoriaceous, oblong-lanceolate, acuminate, rounded or subcordate at base, 6 to 12^{cm} long, 4 to 8^{cm} broad, deeply equally undulate or obtusely dentate; lower lateral nerves nearly in right angle, branching, the others oblique, generally simple, all craspedodrome.

The secondary nerves are more or less distant according to the size of the leaves, being generally 14 pairs.

The relation of this species is to both *Q. Grœnlandica* and *Q. Olafseni* Heer, two species from Greenland, from which this one especially differs by the rounded or subcordate base and the lower nerves nearly in right angle. Except that the leaves are much larger, they may also be com-

pared to *Paullinia germanica* Ung. (Sillog. plant., III, p. 52, Pl. XVI, fig. 8), and are possibly referable to this genus, mostly represented now in tropical America.

Hab.—Cook's Inlet, Alaska.

SALICINEÆ.

Salix Raeana Heer., Fl. Arct., I, p. 102, Pl. IV., figs. 11-13; XLVII, fig. 11.

Species described by Heer from specimens of Greenland.

Hab.—Cook's Inlet.

Populus Richardsoni Heer., U. S. Geol. Rep., VII, p. 177.

Species abundantly represented in the Miocene flora of Greenland and Spitzberg.

Hab.—Chignik Bay.

Populus arctica Heer., U. S. Geol. Rep., VII, p. 178.

Has the same distribution as the preceding, and is still more common in the Miocene of Greenland and North America.

Hab.—With the preceding.

ULMACEÆ.

Ulmus sorbifolia Ung., Schosnitz, Fl., p. 30, Pl. XIV, fig. 10.

Leaf oblong, with borders parallel in the middle; taper pointed or acuminate; secondary nerves numerous, close, parallel, half open (angle of divergence 60°), generally forking near the doubly dentate-crenate borders; primary teeth blunt, turned upwards.

The base of the leaf is destroyed. The preserved part is 4½^{cm} long, 2^{cm} broad, with 18 pairs of deeply marked secondary veins.

The species, which is not mentioned in Schimper's Veget. Paleont., is closely allied to *U. plurinervia* Ung., which has been found in Alaska.

Hab.—Chugachik Bay, Cook's Inlet.

NYSSACEÆ.

Nyssa arctica? Heer., Fl. Arct., II, p. 477, Pl. XLII, fig. 12 c; L. figs. 5, 6, 7.

The fruit which I refer to this species is of the same size and form as fig. 6, *l. c.*, but less distinctly striate lengthwise; the cross-wrinkles slightly marked by Heer, in fig. 6 b. (enlarged), being as prominent as the longitudinal striæ. The fruit somewhat deteriorated by maceration most probably represents the same species abundantly found in Greenland.

Hab.—Unga Island, Shumagin group, Alaska.

DIOSPYRINEÆ.

Diospyros anceps Heer., Fl. Tert. Helv. III, p. 12, Pl. CII, figs. 15-18;
V, Sybir. Fl., p. 42, Pl. XI, fig. 7.

The leaves agree by all the characters with Heer's species especially similar to figs. 16, 17 of Fl. Helv. *l. c.*, the smaller leaf being of the same size as fig. 16. The other specimen, which is fragmentary, is much like fig. 7 of the Siberian Fl. The leaves are broader than in *D. Alaskana*; the lateral nerves more distant, &c.

Hab.—Cook's Inlet.

ERICINEÆ.

Vaccinium reticulatum, Al. Br., Heer., Fl. tert. Helv., III, p. 10, Pl. CI, fig. 30.

Leaves petiolate, oval, very entire, obtuse at the apex, narrowed at the base in rounding to a short alate petiole; lateral nerves open, few, interspersed with tertiary shorter ones; surface deeply reticulate.

The leaves from their size, shape, and nervation correspond with those described by Heer, *l. c.*, the only difference being that one of the leaves I had for examination, the largest, has the short petiole alate. In fig. 30 of Heer, the petiole seems also bordered in the upper part by the decurrent base of the leaf, but the appearance is less distinct. Moreover, there are other leaves in the same collection of Mr. Dall which are smaller and with naked petiole. The difference is not therefore of specific value.

Hab.—Cook's Inlet.

CORNEÆ.

Cornus orbifera Heer., U. S. Geol. Rep., VII, p. 243.

The specimen referable to this species has the lateral nerves curving inward along the borders, anastomosing with the upper ones by nervilles in right angles, as in Heer, Fl. tert. Helv., pl. CV, fig. 16. Heer has also described the species from Spitzbergen specimens.

Hab.—Cook's Inlet.

MAGNOLIACEÆ.

Magnolia Nordenskiöldi Heer., Beiträge zur foss. Fl. Spitzb. (Fl. Arct. IV), p. 82, Pl. XXI, fig. 3; XXX, fig. 1.

Leaves large, thickish, oval, obtuse, entire, emarginate, or shortly auriculate at base; secondary nerves distant, curved in traversing the blade, forking near the borders.

From the numerous well preserved specimens of this beautiful species, I have been able to complete the diagnosis of Heer, made from too fragmentary leaves. The leaves are longer than those of *M. ovalis*, Lesqx., to which Heer compares this species, and also sub-auriculate at base or emarginate; the surface is rugose, crossed in right angles to the

